Release notes for ENDF/B Development n-050_Sn_124 evaluation

April 26, 2017

- `fizcon` Errors:
  1. A bad value in a data table is resulting in log(x) where x .le. 0.0
     MAT=5061, MF= 3, MT= 1 (1): Log(0) or worse

```
 ERROR(S) FOUND IN MAT=5061, MF= 3, MT=  1
    NEG OR ZERO ARG OF LOG BELOW POINT    3          SEQUENCE NUMBER     2
```

  2. A bad value in a data table is resulting in log(x) where x .le. 0.0
     MAT=5061, MF= 3, MT= 2 (1): Log(0) or worse

```
 ERROR(S) FOUND IN MAT=5061, MF= 3, MT=  2
    NEG OR ZERO ARG OF LOG BELOW POINT    3          SEQUENCE NUMBER     2
```

  3. A bad value in a data table is resulting in log(x) where x .le. 0.0
     MAT=5061, MF= 3, MT=102 (1): Log(0) or worse

```
 ERROR(S) FOUND IN MAT=5061, MF= 3, MT=102
    NEG OR ZERO ARG OF LOG BELOW POINT    3          SEQUENCE NUMBER     2
```

- `groupie` Errors:
  1. Very small elastic cross section found
     0: Small elastic

```
 Multi-Group and Multi-Band Parameters from ENDF/B Data (GROUPIE 2015-2)
 ------------------------------------------------------------------------------
 ENDF/B Input and Output Data Filenames
 ENDFB.IN
 ENDFB.OUT
... [97 more lines]
```

- `fudge-4.0` Warnings:
  1. Missing a channel with a particular angular momenta combination
     resonances / resolved / MultiLevel_BreitWigner (Error # 0): missingResonanceChannel

```
WARNING: Missing a channel with angular momenta combination L = 0, J = 1.5 and S = 1.5 for "capture"
WARNING: Missing a channel with angular momenta combination L = 1, J = 0.5 and S = 1.5 for "capture"
WARNING: Missing a channel with angular momenta combination L = 1, J = 1.5 and S = 1.5 for "capture"
WARNING: Missing a channel with angular momenta combination L = 1, J = 2.5 and S = 1.5 for "capture"
```

  2. Potential scattering hasn't converted, you need more L's!
     resonances / resolved (Error # 1): potentialScatteringNotConverged

```
WARNING: Potential scattering hasn't converged by L=0 at E=315000.0 eV, xs[0]/xs[0]=2.88803622439% > 0.1%
```

  3. Cross section does not match sum of linked reaction cross sections
     crossSectionSum label 0: total (Error # 0): CS Sum.

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.18%
```

  4. Cross section does not match sum of linked reaction cross sections
     crossSectionSum label 1: (z,n) (Error # 0): CS Sum.

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.14%
```

- `fudge-4.0` Errors:

  1. Calculated and tabulated Q values disagree.
     reaction label 22: n[multiplicity:'2'] + Sn123 (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -8363735.37789917 eV vs -8495090. eV!
     ```

  2. Calculated and tabulated Q values disagree.
     reaction label 23: n[multiplicity:'3'] + Sn122 (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -14309577.14291382 eV vs -1.44462e7 eV!
     ```

  3. Calculated and tabulated Q values disagree.
     reaction label 24: n + H1 + In123 (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -11975654.15316772 eV vs -1.20936e7 eV!
     ```

  4. Calculated and tabulated Q values disagree.
     reaction label 25: Sn125 + gamma (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: 5856959.923278809 eV vs 5733390. eV!
     ```

  5. Calculated and tabulated Q values disagree.
     reaction label 26: n + He4 + Cd120 (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -6563743.676757812 eV vs -6680880. eV!
     ```

  6. Calculated and tabulated Q values disagree.
     reaction label 27: H1 + In124_s (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -6453794.013092041 eV vs -6357520. eV!
     ```

  7. Calculated and tabulated Q values disagree.
     reaction label 28: H2 + In123_s (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -9751088.052230835 eV vs -9783510. eV!
     ```

  8. Calculated and tabulated Q values disagree.
     reaction label 29: H3 + In122_s (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -11414022.72805786 eV vs -1.15145e7 eV!
     ```

  9. Calculated and tabulated Q values disagree.
     reaction label 30: He4 + Cd121_s (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -1405426.101837158 eV vs -1258220. eV!
     ```

- `njoy2012` Warnings:

  1. Evaluation has no unresolved resonance parameters given
     unresr...calculation of unresolved resonance cross sections (0): No URR

     ```
      ---message from unresr---mat 5061 has no unresolved parameters
                               copy as is to nout
     ```

2. Evaluation has no unresolved resonance parameters given
   purr...probabalistic unresolved calculation (0): No URR

```
---message from purr---mat 5061 has no unresolved parameters
                       copy as is to nout
```

3. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (0): GROUPR/conver (0)

```
---message from conver---cannot do complete particle production for mt= 16
                       only mf4/mf5 provided
```

4. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (1): GROUPR/conver (0)

```
---message from conver---cannot do complete particle production for mt= 17
                       only mf4/mf5 provided
```

5. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (2): GROUPR/conver (0)

```
---message from conver---cannot do complete particle production for mt= 22
                       only mf4/mf5 provided
```

6. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (3): GROUPR/conver (0)

```
---message from conver---cannot do complete particle production for mt= 28
                       only mf4/mf5 provided
```

7. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (4): GROUPR/conver (0)

```
---message from conver---cannot do complete particle production for mt= 91
                       only mf4/mf5 provided
```

- `acelst` Warnings:

1. The incident energy grid is not monotonic for this angular distribution
   0: Bad Ang. Dist.

```
ACELST WARNING - Processing Ang.Dist.MT         2
                 E-grid non-monotonic   1.000000000E-11 1.000000000E-11
```